**COMPLETE STATEMENT OF**

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**U.S. ARMY CORPS OF ENGINEERS**

**BEFORE THE**
**COMMITTEE ON SMALL BUSINESS**
**UNITED STATES HOUSE OF REPRESENTATIVES**

**ON**

# THE IMPACT OF THE 2006-2007 DROUGHT ON GEORGIA'S ECONOMY

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## INTRODUCTION

Madam Chair and members of the Committee, I am Brigadier General Joseph Schroedel, Division Commander, South Atlantic Division, U.S. Army Corps of Engineers (Corps). Thank you for this opportunity to provide testimony regarding the Corps management strategies for federal reservoirs during these times of extreme drought. We take this issue very seriously and I commend you for holding this hearing.

I will start my testimony with an overview of the current drought situation, followed by basic information about Corps roles and responsibilities and a description of how the South Atlantic Division has been operating the federal reservoirs in the Apalachicola-Chattahoochee-Flint (ACF) and Alabama-Coosa-Tallapoosa (ACT) Rivers basin systems and how we have intensified our communication and coordination during these difficult times. I will conclude with my views on future programs and actions that could increase communication and coordination among all affected parties.

## STATUS OF THE SOUTHEASTERN UNITED STATES DROUGHT

Drought conditions in the southeastern United States began in 2006 and continued to worsen over most of the southeast during 2007. The latest U.S. Drought Monitor (http://drought.unl.edu.dm) indicates over 70% of the southeast is classified as being in a drought. The condition in almost 20% of that area is classified as "exceptional," which is the worst drought category. Record rainfall deficits reached 20-25 inches (about 50% of normal) for much of the southeast during 2007. Many streams also reached record low flows during the fall of 2007. Record low lake levels were observed at Lanier and Carters lakes. Municipal and industrial water supply, agriculture, navigation, recreation, hydropower, and the environment all have been severely affected by the drought.

The multi-year 2006-2008 drought persists across north Alabama and northwest Georgia, though seasonal winter rainfall has ameliorated conditions somewhat. The primary concern now centers on the headwaters of the ACF Rivers basin system, which is located north of Atlanta. Lake Lanier is presently at 1054.8 feet (March 14, 2008 reading). This is the lowest elevation ever recorded in mid March, and it is some 13 feet below the level it was at this time last year. Below normal rainfall is forecasted by the National Oceanic and Atmospheric Administration (NOAA) for the remainder of the spring of 2008, therefore it is unlikely that Lake Lanier will be refilled by spring rains. If drier than normal conditions persist, the situation could become more problematic by this summer. On the ACT Basin, Allatoona and Carters lakes are beginning to show signs of recovery. However, it is still unknown if the lakes will be refilled by summer. Drought conditions in southern Alabama, southern Georgia and the panhandle of Florida appear to have ended, as indicated in the latest NOAA Drought Monitor (March 13, 2008.)

## U.S. ARMY CORPS OF ENGINEERS ROLES AND RESPONSIBILITIES

The Corps generally constructs and operates multi-purpose water resource projects. Purposes can include flood damage reduction, production of hydropower, recreation, navigation, water supply, water quality, irrigation, and fish and wildlife conservation. Day-to-day operation of our multi-purpose projects seeks to balance these competing and often conflicting purposes. During drought, these conflicts are magnified due to the limited water resources and higher demands.

Under the authority of the 1958 Water Supply Act, the Corps may make water supply storage available for municipal and industrial (M&I) uses. By making storage available, it conveys the right to store a resource in a Corps reservoir project, but this does not include a guarantee that the water will be available. The federal government makes no representation with respect to either the quantity or quality of water and assumes no responsibility for the treatment or availability of the water. It is critically important for all engaged in water resource issues to recognize that water supply withdrawals are regulated by individual states.

Under normal circumstances, the Corps operates and manages federal reservoirs to meet all authorized project purposes in accordance with water control plans. These plans establish modes of operations under different conditions. It is when drought occurs that complicated issues begin to develop within these basins. Balancing the various reservoirs with available water to maintain project purposes becomes more difficult as available water continues to dwindle. If drought conditions worsen, some project purposes may be temporarily adversely affected. We are often able to concurrently meet several of these needs with one action. For example, although there may not be sufficient water to make special releases for hydropower, water released for water quality or other downstream purposes can also be run through a generator to produce some hydropower benefits.

## CORPS ENGAGEMENT IN THE ACF AND ACT RIVERS BASIN SYSTEMS

The South Atlantic Division's area of responsibility includes all or significant portions of the states of Georgia, Florida, South Carolina, Alabama, Mississippi, and North Carolina. There are four districts within the South Atlantic Division that have water management responsibilities – Jacksonville, Mobile, Savannah, and Wilmington. The ACF and ACT Rivers basin systems fall under the jurisdiction of the Mobile District.

### The Apalachicola-Chattahoochee-Flint Rivers Basin System

**ACF Rivers Basin Description**. The ACF Rivers system is a multipurpose system authorized for flood control, hydropower, navigation, water supply, water quality, recreation, and fish and wildlife conservation. The system covers 19,600 square miles. Seventy-four percent of the basin lies in the state of Georgia, 15% in Alabama, and 11% in Florida. The ACF system includes five federal and 11 non-federal reservoirs. The

federal projects on the basin system begin with Lake Sidney Lanier at the headwaters, West Point Lake, Lake Walter F. George, George W. Andrews and Lake Seminole at the lower end of the basin. There are also run-of-the-river hydropower facilities operated by private and public utilities along the system.

**ACF Rivers Basin Operations.** The ACF Rivers Basin system operation is guided by a draft water control plan developed in 1989 that defines action zones for each of the major storage projects on the ACF, i.e., the Lanier, West Point and Walter F. George reservoirs (finalization of the draft 1989 plan was halted by litigation). The zones are used to manage the lakes for flood control, hydropower generation, navigation, recreation, and other authorized purposes. These zones were derived based on the past operation of the projects which considered the time of year, historical pool level/release relationships, and operational limits for conservation and recreational resource impact levels.

The three lakes that represent the major storage facilities in the ACF system are operated so as to maintain water levels in the same zones concurrently. However, due to the hydrologic and physical characteristics of the river system and other factors such as time of year, there may be brief periods when one lake is in a lower zone than the other. If this occurs, efforts are made to bring the lakes back in balance with each other as soon as conditions allow. By doing this, impacts to the river basin are shared equitably among the projects.

Under drought conditions, meeting all authorized purposes becomes challenging. Meeting certain authorized purposes may temporarily take precedence over some other purposes. Federal actions that could affect endangered species are governed by the Endangered Species Act and consultation with the U.S. Fish and Wildlife Service (USFWS) may be required depending on the actions being contemplated.

**Management of the ACF in Drought Conditions**. On the ACF, an Interim Operating Plan (IOP) which provided for target flows to support endangered species under differing hydrologic conditions was implemented in September 2006. The summer of 2007 brought extreme heat and drought conditions in Georgia which, coupled with flow requirements in the ACF system, caused system storage to be depleted at a rapid rate. In particular, flow requirements at the Jim Woodruff Dam at Lake Seminole to support industry and endangered species were driving water management decisions. Therefore, in September 2007, the Corps and USFWS initiated discussions to temporarily modify the IOP in response to the exceptional drought conditions and rapidly declining conservation storage in the system.

The resulting Exceptional Drought Operations plan (EDO) is a temporary modification of the existing IOP. The intent of the EDO is to minimize adverse impacts to listed species in the Apalachicola River while making allowances for increased storage opportunities and/or reductions in the demand of storage in order to provide continued support to project purposes and minimize impacts to other water users during a severe multi-year drought.

Formal consultation on the proposed EDO was completed with issuance of a Biological Opinion by the USFWS on November 15, 2007, and the Mobile District was able to immediately lower the flow requirements and increase the storage provisions of the Corps IOP to conserve water in the system. The EDO allowed for reduction of the 5,000 cubic feet per second (cfs) minimum flow requirement in the Apalachicola River, as measured at the Chattahoochee gage, to a 4,750 cfs minimum flow requirement (the reduction in flows follows the IOP maximum fall rate schedule) when Composite Storage falls below the bottom of Zone 3 into Zone 4.

The Biological Opinion for the EDO will expire on June 1, 2008. In the near term, the Corps is working with USFWS to extend short-term drought operations beyond that expiration date. We are in consultation with the USFWS to determine what, if any, modifications need to be made to the EDO or the IOP given current and projected conditions in the basin. As the situation stands, it appears we could be entering the spring and summer season with the lowest amount of storage ever in the ACF basin. Our goal, given this situation will be to meet as many basin needs as possible with the basin resources available.

**Alabama-Coosa-Tallapoosa Rivers Basin System**

**ACT Rivers Basin Description.** The ACT Rivers system is a multipurpose system authorized for flood control, hydropower, navigation, water supply, water quality, recreation, and fish and wildlife conservation. The basin covers 22,800 square miles. Seventy-seven percent of that area is in Alabama, the remainder is in Georgia. The system has five Corps projects and ten Alabama Power Company (APC) dams. The Corps projects consist of two major storage projects, Allatoona and Carters in Georgia at the upper end of the basin and three run-of-the-river lock and dam projects at the lower end of the basin in Alabama – Robert F. Henry, Millers Ferry and Claiborne. The Corps projects constitute 22% of the available storage in the system. APC projects are located on the Coosa and Tallapoosa Rivers and are operated in conjunction with the Corps. The APC projects constitute 78% of the available storage in the ACT system. The Corps oversees the APC projects only for purposes of flood control operations.

**ACT Rivers Basin Operations.** The ACT Basin is also operated as a system. The majority of the drainage area and storage capacity, however, belongs to Alabama Power Company. Emphasis is placed on maintaining storage in headwater projects (i.e., Allatoona, Carters) during periods of reduced flow. Carters Lake is a pumped storage project that provides a significant portion of generation within the Southeastern Power Administration's AL/GA/SC system and is operated to maximize hydropower production during periods of reduced flow. Water is released from Carters Lake only to achieve minimum flows necessary to support instream water quality requirements.

On the ACT, there is a 4,640 cfs minimum flow requirement from the Coosa and Tallapoosa Rivers. This flow requirement, contained in an agreement between the Corps and the Alabama Power Company, is determined by a minimum seven day

average flow, rather than a single day measure. The flow is made up of flows from the APC projects (Jordan, Bouldin, and Thurlow) which augment flows to meet either the flow requirement below Claiborne Dam to make navigation on the Alabama River possible or a 6,600 cfs flow requirement (the 6,600 cfs standard is the lowest stream flow that is likely to occur for seven consecutive days within a ten year time period). When drought conditions indicate that a drought is imminent, the Corps evaluates the impact to the Alabama Power projects, Corps projects, and navigational interests, of operating under the low flow agreement. The Corps coordinates with APC to determine if a change in flow agreement is warranted.

**Management of the ACT Rivers Basin System During Drought.** As conditions deteriorated in the spring of 2007, the South Atlantic Division and Mobile District held a Drought Summit for the ACT Basin in Columbus, Georgia on June 25, 2007. Affected stakeholders in Georgia and Alabama, as well as state and federal agencies that deal with the system attended the summit. The summit allowed the Corps to gain a better understanding of their views and concerns, and allowed them to share technical information with the Corps. During this meeting, the Corps briefed summit participants on the current and future operations in the system.

As the drought worsened through the late summer of 2007, the Mobile District and division staffs have worked closely with state agencies in Georgia, Alabama and the APC to coordinate and develop drought management policies. On November 14, 2007, the Corps began coordination with the state of Alabama and the APC and jointly developed ten proposals for drought management within Alabama. The actions included short and long-term items. To date, seven of the ten proposals have been implemented, and work continues on the three long-term proposals.

**Coordination with the public and other agencies intensifies during drought conditions**

Open and continual communication has figured prominently in our approach to managing the ACF and ACT Rivers basin systems during this historic drought. On July 11, 2007, the Mobile District began to conduct weekly teleconferences for ACT stakeholders and on September 20, 2007, the district began holding biweekly teleconferences for ACF stakeholders. These teleconferences allow all to hear the latest information on system conditions, to be informed of future operational changes, and to adjust their actions and/or expectations based on the information provided. The calls also provide a venue through which participants transmit information to the Corps.

Division and district community outreach has been robust. Corps staff has engaged in hundreds of community forums including meetings, local news programs, and radio and newspaper interviews, all in an effort to inform the public about the roles and responsibilities of the Corps and the challenges it faces. We have gained an in-depth understanding of the concerns of the industry, user and supply groups, and the public.

Coordination with other federal agencies such as the Department of Interior, USFWS, the U.S. Environmental Protection Agency, NOAA, and the Federal Energy Regulatory Commission (FERC) is extremely important. We believe it is vitally important that we act as an integrated federal team given the complexity of the issues that span multiple state and local governments, and affect numerous user groups and private industries such as those which provide hydropower.

Our work with NOAA is an excellent example of federal cooperation as we look to their expertise in drought monitoring and prediction to assist our programs and actions. They have briefed us extensively during this drought and we value their continued support.

Our coordination with the USFWS has been extremely successful. Under drought conditions, the impacts of our actions on endangered species, such as three species of mussels and the Gulf sturgeon on the Apalachicola River, require consultation under Section 7 of the Endangered Species Act (ESA). During informal consultation and as new scientific information became available, the Corps adjusted its operations at the Jim Woodruff Dam as needed to provide adequate flow conditions to afford protection for the Gulf sturgeon and protected mussel species in the Apalachicola River. Our team approach to ESA coordination has allowed both agencies to cut review times to lengths never imagined possible.

Consideration of the potential impacts on drinking water supplies and energy production has prompted us to coordinate with the Department of Homeland Security (DHS). After initial briefings for DHS staff we provide weekly data to DHS on the status of the projects where water shortages are most acute.

**Near Term Drought Mitigation Strategy: Updates of Water Control Plans**

Project operations at each reservoir are described in water control plans and/or manuals. These manuals typically outline the regulation schedules for each project, including operating criteria, guidelines, rule curves, and specifications for storage and releases from the reservoirs. The water control manuals also outline the coordination protocol and data collection, management, and dissemination associated with routine and specific water management activities (such as flood control operations or drought contingency operations). Updates or revisions to the water control plans are typically integrated with the National Environmental Policy Act (NEPA) public involvement and documentation process.

The district water managers in the southeast have been diligent in adjusting operating and drought plans to manage the limited water resources during this drought. When the conditions became so severe that our approved plans could no longer support the systems, in accordance with our regulations, the district water managers requested approval for temporary deviations from the division.

Current and up-to-date water control plans are the most important management tool water managers have. Without updated water control plans, the Corps runs the risk of

any or all of the following: adversely affecting water quality downstream; failing to provide sufficient water where and when needed to meet the authorized purposes of our projects and the needs of stakeholders, whether domestic or municipal and industrial; adversely affecting endangered species; expending water resources too early, thereby reducing our ability to maintain the system to meet project purposes and the needs of the stakeholders; and flooding people and facilities that are now within flood plains.

Updates of water control plans are done in accordance with statutory (Flood Control Act of 1944) and regulatory requirements (Engineer Regulation (ER) 1110-2-240 and ER 1110-2-8156), that comply with NEPA and account for demographic, hydrologic, environmental, and technological changes that have occurred within the basins. The Water Resources Development Acts (WRDA) of 1988 and 1990 also provide for public involvement of all interested stakeholders during the development of new or revised water control plans, which ensures consideration of the current public interests within the basin.

The South Atlantic Division is now in the process of updating several water control plans in accordance with Corps regulations. The Mobile District has recently been directed by the Secretary of the Army to update the water control plans for the ACF and the ACT Rivers basins. These water control plans were being updated in the late 1980s and early 1990s when work was stopped due to litigation.

**Future: Southeast Regional Water Resource Council Concept**

If any of the agencies - whether federal or state, industry or the public - are to successfully manage water, we must find a way to work more closely and cooperatively across boundaries, missions, and jurisdictions. Towards this end, almost a year ago I introduced the concept of a state-led forum to develop a regional vision for integrated solutions to water resource challenges in the southeastern region. My intent was to establish a process whereby the Corps and other federal partners could ensure our programs and priorities are in concert with states needs and priorities across the region and to foster a more collaborative and consistent effort for development and use of water resources in the region.

Early informal feedback from our contacts with governors and state government officials was generally favorable, but cautious. Initial feedback from a variety of constituent groups with direct interest in water resources issues was quite favorable. They saw the regional council of states as an opportunity to reduce fragmentation, establish more consistent approaches to water resources issues across the region, set some overarching regional water resource priorities, and build a collaborative working relationship among states and federal partners. We have since assigned a team of division and district staff to refine the concept and to further communicate with the states and stakeholders. We are in the process of that coordination now.

The concept, as it is now defined, is a state-led forum among the southeastern states to address existing and emerging regional water resources challenges in the region. A

regional water resources forum in the Southeast would provide a means to: (1) maintain ongoing multi-state regional dialogue on water resources issues and priorities; (2) develop regional strategies and establish regional priorities for water resources management and investments; and (3) promote creation of innovative interstate partnerships to address critical water resources issues.

I strongly believe establishing a southeastern water resources council could provide enormous benefits to the states, federal partners, and residents of the region.

**CONCLUSION**

Madam Chair, members of the Committee, thank you for this opportunity to testify before you. This concludes my testimony. I would be happy to answer any questions you might have.

**APPENDIX**
**Provisions of the Exception Drought Operation Plan for the ACF Rivers Basin**

Consistent with the existing IOP which uses **Composite Storage** to trigger whether the desired minimum flow (6,500 cfs) or the required minimum flow (5,000 cfs) is maintained, the proposed action also uses Composite Storage to determine when the EDO is required. The Composite Storage is calculated by combining the storage of Lake Sidney Lanier, West Point Lake, and Walter F. George. Each of the individual storage reservoirs consists of four Zones. These Zones are determined by the operational guide curve for each project. The Composite Storage utilizes the four Zone concept as well.

The EDO is "triggered" whenever the Composite Storage falls below the bottom of Zone 3 into Zone 4. At that time the provisions of the IOP are suspended and management decisions are based on the provisions of the EDO. The provisions of the EDO remain in place until conditions improve such that the Composite Storage reaches a level above the top of Zone 3 (i.e., within Zone 2). At that time, the EDO provisions are suspended, and the provisions of the IOP are reinstated.

The EDO includes the following provisions and triggers:

- Immediate suspension of all IOP provisions including seasonal storage limitations, downramping restrictions, and minimum flow thresholds, and volumetric balancing accounting whenever the Composite Storage falls below the bottom of Zone 3 into Zone 4;

- Immediate reduction of the 5,000 cfs minimum flow requirement in the Apalachicola River, as measured at the Chattahoochee gage, to a 4,750 cfs minimum flow requirement (the reduction in flows will follow the IOP maximum fall rate schedule) when Composite Storage falls below the bottom of Zone 3 into Zone 4;

- Reduction of minimum flow requirement in the Apalachicola River, as measured at the Chattahoochee gage, to 4,500 cfs when (1) cumulative annual basin inflow above WF George Dam is less than 5$^{th}$ percentile, (2) monthly basin inflow above the Newton Gage on the Flint River is less than 5$^{th}$ percentile, and (3) West Point and WF George projects are at the bottom of zone 4 (top of inactive storage) and Lake Lanier is in zone 4;

- Additional reduction of minimum flow requirement in the Apalachicola River, as measured at the Chattahoochee gage, to 4,150 cfs is anticipated if severe drought conditions persist and will be based on appropriate triggers or criteria, yet to be developed in consultation with the USFWS;

- Implementation of a monthly monitoring plan that tracks Composite Storage in order to determine the appropriate water management operations (the first day of each month will represent a decision point) and whether EDO triggers are applied;

- Reinstatement of the 5,000 cfs minimum flow requirement, but none of the other IOP provisions, once conditions improve such that the Composite Storage reaches a level above the top of Zone 4 (i.e., within Zone 3);

- Suspension of all EDO provisions and reinstatement of the normal IOP provisions once conditions improve such that the Composite Storage reaches a level above the top of Zone 3 (i.e., within Zone 2).